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DRINKING, SMOKING AND ADULT DISEASES

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DRINKING, SMOKING AND ADULT DISEASES

by
Hisaaki Inui, Naruto Horiuchi and Genzo Tatabe

Introduction

It is an interesting study to find out how much influence the use of luxury items have on occurrence of adult diseases. Of all the adult diseases, cancer is the most important disease as it is a direct threat to life. Ueki and others, after considerable investigation of cancer patients's eating habits and use of articles of luxury, state that there is a certain degree of correlation between eating habits and the use of luxury articles and the occurrence of cancer. Datum was gathered from all over the country in the two researches done by the cancer research group of the Ministry of Public Welfare. However, there are many answers that still depend on further research. To find out what type of relation exists between the occurrence of other adult diseases and the use of articles of luxury, we have to discuss many points, since life conditions in our country are rapidly changing at the present time.

Therefore, on the basis of the examination obtained at our dock*, we give some reports about adult diseases and the influence of alcohol and cigarettes on them.

1) The influence of drinking

We took 293 male samples, whose drinking amount was definitely known, since they were under the care of the dock. As is shown in Table 1, those who do not drink at all are in A group, those who drink 0.180 l (0.327 pt.) a day or just a little sometimes are in B group, those who drink 0.19 l to 5.3 l a day are in C group, those

* (Translator's note: "dock" refers to the outpatient clinic.)

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who drink more than 5.4 1 a day are in D group. In the study of diseases caused by alcohol, there are various problems such as the type of alcohol, the period of drinking, how often one takes a drink in a week or in a month. But in the case of beer, whiskey and so on, we took the amount of alcohol included and converted it into that of Japanese wine. At any rate, no matter how we consider the frequency and amounts of alcohol, those who are in D group are considered to be strong drinkers.

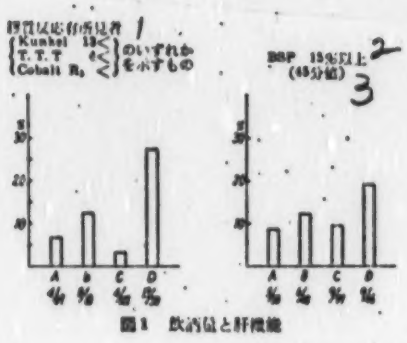
表1 ドック入院者の年令別 飲酒量

3 群	年代 / 飲酒量	40才代	50才代	60才代	70才代	計
A	全 く 飲	17	29	22	4	72
B	1合以下	22	21	16	4	63
C	1.1~2.9合	37	48	16	7	108
D	3合以上	20	21	8	1	50
計		96	119	62	16	293

Table 1. The amount of drinking by age of those who are in the care of the dock.

1. Age
2. Amount
3. Group
4. No drink at all
5. 0.180 1 or less a day
6. 0.190 1 to 5.3 1 a day
7. 5.4 1 or more a day
8. 's
9. Total

Graph 1 shows the relation between the amount of drink and liver function.



Graph 1. Relation between the amount of drink and liver function

1. Shows either one
2. 15% or more
3. 45 minute

The percentage rate of indicating either one of the following reactions is very high in D group: Sulphate zinc reaction of Mr. Kunkel, thymol muddle reaction, chloridate cobalt reaction or any which shows abnormal figures. D group also had the highest rate of those with 15% or more of BSP.

Table 2 shows the relation of the patients and drinking who took the abdominal cavity mirror and liver examinations done by us. In the male group, D group has a high rate of hepatitis and cirrhosis of the liver.

表2 飲酒量と肝疾患
(肝臓検査および腹腔鏡検査実施の上診断)

1 群別	2 慢性肝炎 3 男	4 女	5 肝硬変 6 男	7 女	8 計
A	7	6	10(1)	1	24
B	7(1)	1	10	0	18
C	1	0	0	1	2
D	11	0	20(6)	0	31
計	26	7	40	4	77

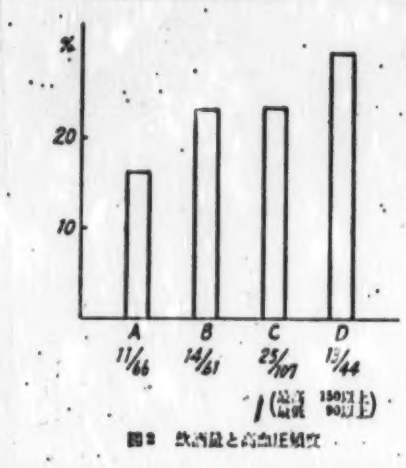
9 ( ) 内は糖尿病を合併するもの

Table 2. Amount of drink and liver diseases
(After giving the liver tests and abdominal cavity mirror)

1. Group
2. Chronic hepatitis
3. Male
4. Female
5. Cirrhosis of the liver
6. Male
7. Female
8. Total
9. Inside ( ) are those who have diabetes also

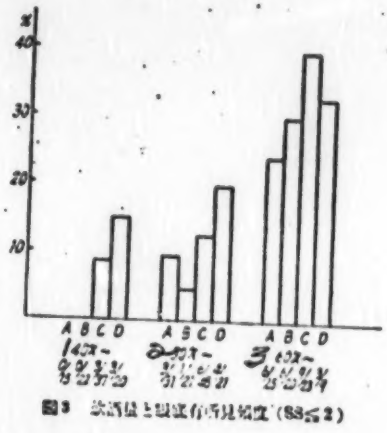
Of the 20 cases of cirrhosis of the liver in D group, six cases had diabetes as well. (After feeding 50 g of grape sugar through the mouth at the time of hunger, sugar in the blood exceeds 120 mg/dl after 2 hours or 3 hours. (Autoanalyzer law)) This fact is very interesting. It is hard to deny that drinking more than 5.4 l a day has some affect on occurrence of liver problems.

Graph 2 and Graph 3 show the relation with drinking and high blood pressure and hardening of the arteries of the eyes. (It is more than second degree of the hardening of arteries by Scheie.)



Graph 2. Amount of drink and occurrence of high blood pressure

1. The highest 150 or more; the lowest 90 or more



Graph 3. Amount of drink and occurrence of arteriosclerosis of the eyes.

1. 40 years
2. 50 years
3. 60 years

D group has a tendency of having slightly higher occurrence of high blood pressure but the ages seem to have strong affect on hardening of the arteries of the eyes. People are noticing that alcohol is one of the causes of liver problems. But there are still some unclear questions whether the affect of alcohol is indirect or direct. We think that most of the aliphatic cirrhosis of the liver is caused by the exceeding usage of alcohol. It used to be considered that we did not have any aliphatic cirrhosis of the liver in our country, but as the result of increase in the post-mortem examinations of sudden deaths along with the practice of medical inspection system, we found that they were not very rare cases in our country.[2)] Concerning thr relation between cirrhosis of the liver and drinking in our country, Ueda reports that of those who drink every day, there are many who have cirrhosis of the liver portal vein. After undertaking the investigation with the patients of cirrhosis of the liver in the hospitals in Osaka, Kawada also reports that those who have been drinking for more than twenty years and who drink 5.4 l or more every day have a high frequency of having cirrhosis of the liver. Takeuchi and others state that many of those who drink a lot suffer cirrhosis of the liver, concluding from his examinations: of 117 cases of cirrhosis of the liver of the class cases, those who drink more than 5.4 l a day are 21 cases; of 231 cases of cirrhosis of the liver from the cases taken by the United Research Group of the Ministry of Education for classification of cirrhosis of the liver, 56 cases drink more than 5.4 l a day.

Klastskin[6], using the table (Table 3) of the relation between cirrhosis and alcoholism done by Jolliffe, made further examinations.

表3 Incidence of cirrhosis and chronic alcoholism found at autopsy

Incidence of cirrhosis in the general population
Range : 0.9～3.9% (19 series, 110,970 autopsies)
Average : 2.4%
Estimated incidence in nonalcoholics : 1.2%
Incidence of cirrhosis in alcoholics
Range : 1.3～19.8% (11 series, 2045 autopsies)
Average : 8.7%
Incidence of alcoholism in cirrhosis
Range : 27.5～64.0% (10 series, 913 autopsies)
Average : 33.6%

(Klastskin, G : Gastroenterology. 41 : 443, 1961)

He reports that the development from aliphatic liver to cirrhosis of the liver is caused by nutritious impediment, especially the lack of chlorine is an important cause, but some are caused by direct impediment of alcohol. Mibe did research on literature and he says that the strong drinkers' poor diet is a very important factor in causing the occurrence of liver problems, but also alcohol, which is known to affect the oxidizing and deoxidizing enzymes in the liver cells during the process of metabolism of alcohol, directly causes the liver problems to occur. However, he comments that we cannot absolutely know for sure yet because there are some opinions which say that the liver change caused by acute alcoholism and that by insertion of alcohol for a long period are not the same thing. Erenoglu[8] says that the nutritious impediment rather than alcohol is a more important factor in causing the development of cirrhosis.

In other words, when the 21 middle degree cases of patients with cirrhosis were given 198 ml of 55% ethanol alcohol through mouth for two months, the group which was given 100 to 120 g protein per day did not develop any liver problem symptoms. Whereas the group with low protein diet of 30 g per day showed increase of fat in the liver or of inflammatory cells. It is unknown whether this is due to the lack of protein or poisoning function of alcohol or both, yet he concludes that alcohol does not make the liver problems worse with sufficient supply of protein. Also, Galambor[9] and others,, from research find the change of GOT·GPT, LDH, SDH upon the intravenous injection of 0.5 to 1.0 ml alcohol per 1 Kg of one's weight of the patients who have liver problems and normal healthy people. They stated that the change in activity of the abovementioned enzymes of the patients was very great but they could not recognize any significant difference before and after the injection of alcohol.

On the other hand Moretti[10] and others report that in the early period of cirrhosis, the damage of the liver cells is not so serious, but ornithine-carbamyl-transferase(OCT) is so agile that it becomes normal with 4 to 30 days absence of alcohol. In other words, alcohol does cause the liver problems directly, but by stopping its supply, the change of the cells are restored in the early period of cirrhosis. However, they further report that in the development of cirrhosis, the amount of OCT cannot be changed even with the absence of alcohol.

Goldbery and others did research on the change of GOT, GPT, OCT, ICD after giving the diluted solution with 1.7 g ethanol

alcohol per 1 Kg of a normal person's weight slowly for four hours. As the result of the research, they reported that GOT and GPT did not change before and after giving it, but ICD increased significantly in four hours, but became normal 15 hours later; OCT reached the highest after 15 hours and became normal in 24 hours. The difference of entering of these enzymes into the blood has to do with the connection with the liver cells, the size and shape of protein molecules, but the increase of ICD and OCT shows the direct effect of alcohol to the liver. Takeuchi and others also performed experiments by giving patients in 16 cases of chronic hepatitis drop injection of 10 ml of salt solution 5% alcohol per 1 Kg of their weights. They reported that two cases of GOT and one case of GPT showed a significant increase as a result.

People have given great attention to "Beckett" recently. Green[13] summarized the symptoms of 50 cases of acute beckett. It characterizes strong drinkers; those who have taken enormous amounts of drink and have the following symptoms such as no appetite, losing weight, psychosis , vomiting, yellow ulcer, stomach ache, swollen liver or spleen and unknown fever. Then from the medical examination, abnormal increase of GOT compared with GPT, abnormality in stickiness reaction, increase of serum alkali and phosphorous, anemia, high sugar in blood, increase of leukocyte count and single corpuscle count and inflammation change in the liver system are found.

Porta[14] and others are giving further investigation in attempting to determine the results of the systematic appearance of acute alcohol hepatitis through optical microscopes and electronic microscopes. Strom[15] observed one case that showed high cholesterol serum in the acute alcohol hepatitis to see whether the Zieve symptom group[16] and the acute alcohol hepatitis exist together or not. Zieve symptom group is said to have relation with alcoholic aliphatic cirrhosis with the characteristics of yellow ulcer, aliphatic blood symptoms and hemolytic anemia. However, damage of the liver or inflammation in appearance do not accompany it. The aliphatic liver is the base of acute alcohol hepatitis. Acute alcohol hepatitis has the symptom of poisoned hepatitis, but Zieve symptom group has the main symptom of acute impediment of metabolism of fat. The symptom Strom shows is supposedly the close relation of the two. Concerning the Zieve symptom group, in our country also, Naito and others[17] reported one case and said that it should be given more attention from the early part of diagnosis of alcohol aliphatic liver from now on.

Yamamoto explains the alcohol cirrhosis occurrence in the United States. The diet, the body, the types of alcohol, duration of drinking and so forth are different in our country from those of the United States, therefore, the image of the sickness is different also, but such cirrhosis that may be yielded by the change of living style in our country should be given consideration. As the types of the liver problems of strong drinkers of our country, Takeuchi and others[19] list from aliphatic liver to cirrhosis of portal vein (septum type), others which show the appearance of cirrhosis after

damage type, and those which show the appearance of acute alcohol hepatitis. Ishihara and others state that of 50 cirrhosis cases, whose drinking habits are very clear, 28 cases have granules with diameters of less than 3 mm and of 28 cases, 14 cases have narrow interstitial distance with sub-lobulic pseudo-lobule. Even though this shows the characteristics of aliphatic cirrhosis of the liver, there exist some strong drinkers with quite wide interstitial distance of the system or with large surface granules. So they urge necessity of further investigation concerning the possibility of moving from the typical cases mentioned above and effect of other factors besides alcohol. Mibe and others[20] report that they found some symptoms of sickness in 22 cases of strong drinkers, but they could not find the direct relation of morphological symptoms of sickness and the type of alcohol drinks and duration of drinking. Miwa and others[21] found the appearance of sickness from hepatoze to cirrhosis of 67 cases of strong drinkers and are studying further about the movement. They are examining the appearance of the liver system of strong drinkers through an optical microscope and an electronic microscope, supposing that there exist cases where strong drinkers develop cirrhosis. Kawada[4] reports that many of the liver systems of cirrhosis of strong drinkers were with small nodules, sub-lobules, and narrow interstitial distance. Those who drink and eat a poor meal often showed wide interstitial distance, but none of those who took sufficient protein with drink showed such a case. Contrary to this many cases of cirrhosis whose causes are not so clearly known such as yellow ulcer, poor diet, drinking and etc. showed large nodules, complex lobules and none of them showed small nodules or sub-lobules. However, we cannot

guess the cause of cirrhosis from the types and how much alcohol, malnutrition and virus hepatitis because in order for cirrhosis to occur quite a bit depends on the area, the circumstance and the individual, therefore, there still remain many problems in order to really grasp the actual condition of cirrhosis in our country.

We used to think that imbalance of diet, and deficiency of protein and chlorine which are seen always among the strong drinkers were most important factors in causing liver problems rather than direct influence of alcohol itself, but recently they became very important factors. There is no doubt that alcohol causes various problems to the liver, but there are many other factors which influence the cirrhosis occurrences, so we still have many things yet to study.

2) Smoking Effect

As we could see from the words "smoker's cough" smoking is one of the very important factors in causing chronic bronchitis or chronic pulmonary emphysema. We often experience in our daily lives that such symptoms as cough, phlegm and anhelation at work are healed easily by stopping smoking.

Graph 4 shows the acute effect of a normal person's smoking versus his respiratory resistance. By smoking several times, the respiratory resistance immediately increases and we can see broncho-constriction beginning to occur. It is said that the increase of windpipe resistance caused by smoking is mainly due to the constriction of the smooth muscle through the broncho-constriction fiber. And the part much closer to the mouth in the windpipe rather than the terminal

respiratory units (= respiratory broncholi + alveolar duct + aveoli) is more often affected. The characteristics of constriction in large airways (the airway higher than terminal respiratory units) of the nerve system is an increase of windpipe resistance and a decrease of windpipe air containing capacity but no change of lung compliance[24]. Since the increase of windpipe resistance causes the time constant (resistance X compliance) to increase, it takes longer time to exhale the air in the lungs with passive expiration than a normal person. Therefore, in the end of the bronchoconstriction of the lungs, the air remains and the lungs take on the condition of hyperinflation. A normal lung compliance means that the level of lungs is intact, but Martt recognizes that the smokers show significant decrease capability to scatter CO comparing with non-smokers. This opinion indicates that the respiratory system in the above cases has problems at the alveolar level. There remains the question of whether this is the primary result of smoking or the secondary caused by mixed infection. But there is a possibility that the constriction of the large airways mentioned above causes the organic change of the lung walls, organologically speaking it is a movement to pulmonary emphysema or functionally speaking it is the change of the terminal respiratory units caused by decrease of lung compliance and causes a series of process problems of the partial lung respiratory system.

Table 4 shows the 293 male patients who are under care of the dock with normal "re-line" of the breast. Graphs 5 and 6 and Table 5 show the effect of ages and amount of smoking on rate per second and MEFR (Maximal Expiratory Flow Rate). Rate per second and MEFR

are used very widely as examinations to determine any abnormalities in the windpipe because decrease in them means the narrowing of the windpipe. The age affects more for the decrease of these index numbers than smoking.

The index numbers show the function of the difference between the maximal inhalation flow and the maximal effort exhalation flow to a given time. There are some other factors such as the strength of respiration muscle and the degree of effort to exhale besides the size of the windpipe. It is said that in order to detect light bronchoconstriction, the indirect measuring means such as the rate per second or MEFR are too insufficient. Therefore, normality in the rate per second or MEFR examinations does not necessarily negate the existance of light abnormality of the windpipe. As is shown in Graph 7, Takahashi and others recognize the fact that the frequency of occurring chronic bronchitis prescribed according to Fletcher's definition increases as the amount of smoking increases, especially smoking has greater effect among older people. The particles in the cigarette smoke cause the harmful function especially in the ciliary function of the windpipe. According to the research with culture organs, the cilia exposed to the smoke stops functioning completely. These harmful particles are shut up around the area where the windpipe divides, or in the eddy caused by the secretion in the windpipe without being carried out of the body with exhalation and stay in the part of the windpipe and promote the hypertrophic and increased production of the mucilage gland to occur. I do not think it is possible any more to negate the possibility of cause and effect relation of these organological changes and carcinogenesis

or other problems of the respiratory organ[28-36].

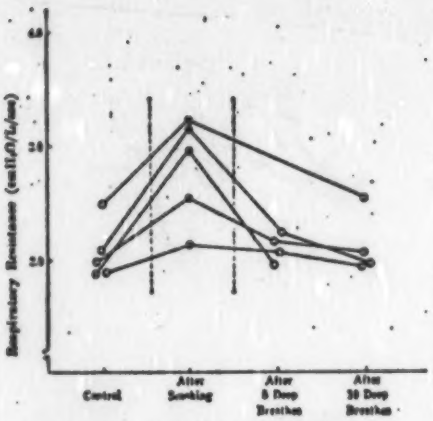


図4 喫煙の気道におよぼす影響

Graph 4. Effect of smoking on the windpipe.

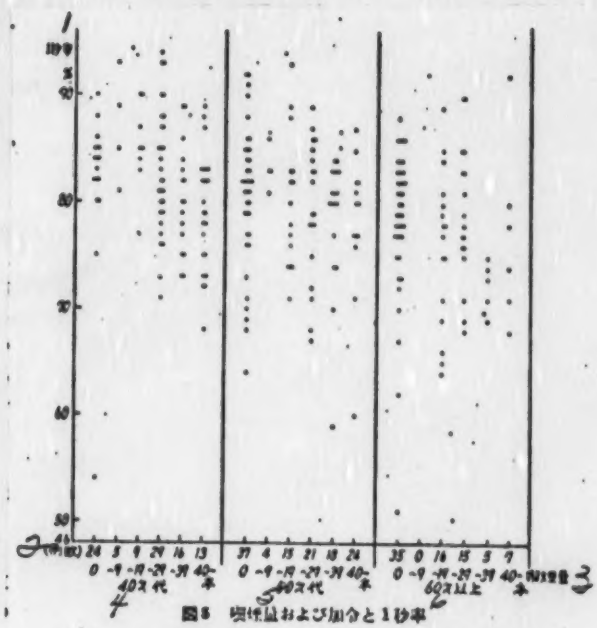
表4 ドック入院患者の年令別，喫煙量

1日喫煙量 \ 年代	40才代	50才代	60才代	70才代	計
0本	34	37	20	5	96
～9	5	4	0	0	9
～19	9	15	9	7	40
～29	29	21	14	1	65
～39	16	18	4	1	39
40本以上	13	24	6	2	44
計	96	119	63	16	293

Table 4. Amount of smoking by the age of those who are under care of the dock

1. Age
2. # of cigarettes per day
3. 40 or more
4. Total

5. 40's
6. 50's
7. 60's
8. 70's
9. Total



Graph 5. Amount of smoking and age and rate per second

1. Rate/second
2. # of cases
3. # of cigarettes
4. 40's
5. 50's
6. 60's

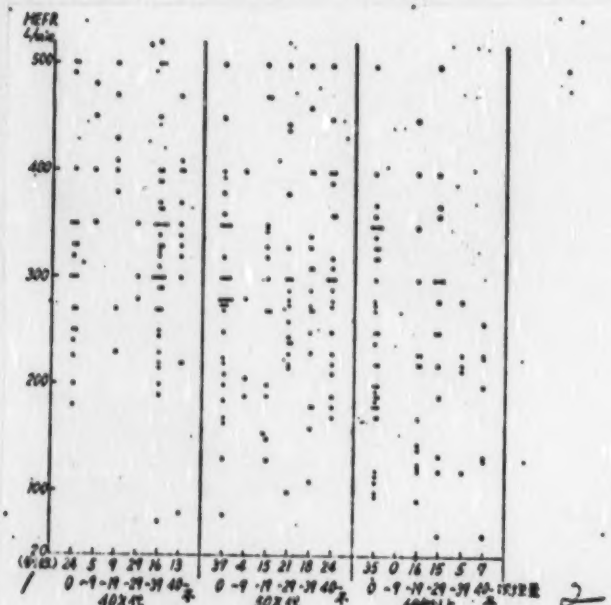


図6 喫煙量および加令とMEFR

Graph 6. Amount of smoking and ages and MEFR

1. # of cases
2. Amount of smoking - # cigarettes
3. 40's
4. 50's
5. 60's

表5 喫煙量および加令の1秒率，MEFRに対する影響
/(図5・6の平均値)

1 秒 率 (%)

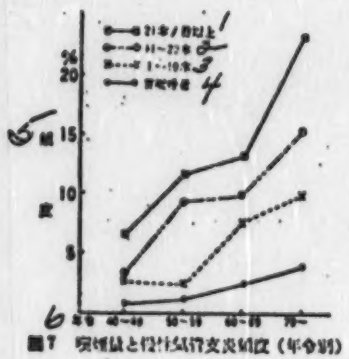
タバコ本数 / 年令	0	~9	~19	~29	~39	40~
40才~	78.4	/	76.0	78.7	72.4	73.0
50才~	80.4	81.6	80.9	79.5	78.7	79.3
60才~	81.4	87.0	83.1	82.0	80.9	78.1

MEFR (L/min)

タバコ本数 / 年令	0	~9	~19	~29	~39	40~
40才~	258.0	/	210.3	258.0	212.0	177.3
50才~	271.6	268.8	309.9	276.1	292.5	277.1
60才~	332.4	420.0	284.9	327.4	278.1	223.8

Table 5. Effect of amount of smoking and ages on rate per second and MEFR

1. Averages of Graph 5 and 6.
2. # of cigarettes
3. Rate per second (%)
4. Age



Graph 7. Frequency of chronic bronchitis and amount of smoking (by age)

1. 21 or more/day
2. 11-20
3. 1-10
4. non-smokers
5. frequency
6. age

Summary

We took alcohol and smoking as articles of luxury and made some study of those patients who are under hospital care in the dock of our center. Adding to some literary research about the effect of alcohol on the liver and that of tobacco on the windpipe, we illustrated the results of the examinations of the relations of amount of drink and the liver function and of amount of smoke and the respiratory function of the patients. We cannot deny the fact that alcohol and tobacco give some on occurrences of the liver and of respiratory diseases. But in order to find out how they cause them to occur or to develop, we still have to give further research and examinations.

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